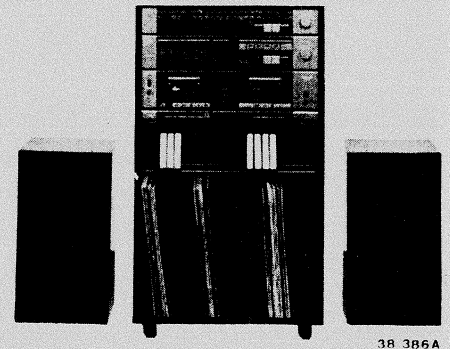


# Service Service Service

CX663

For Servicing Information concerning the cassette mechanism refer to Service Manuals: "Recorder Tape Decks RT72, RT77 and RT1".

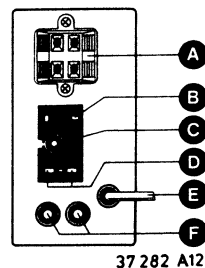
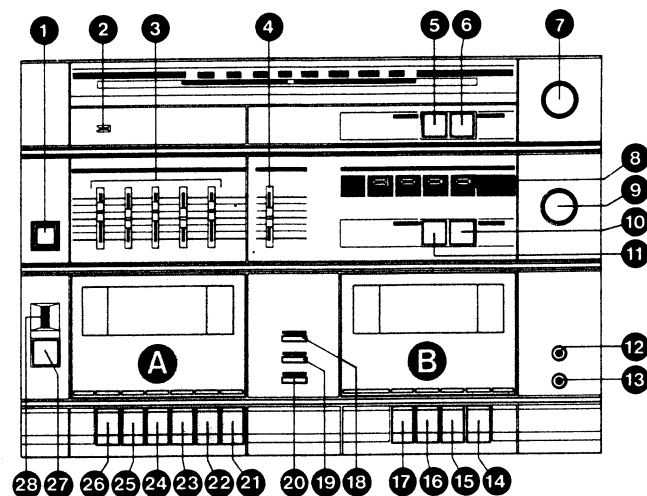
For Servicing Information concerning the record player refer to Service Manual F7046/00A.



38 386A

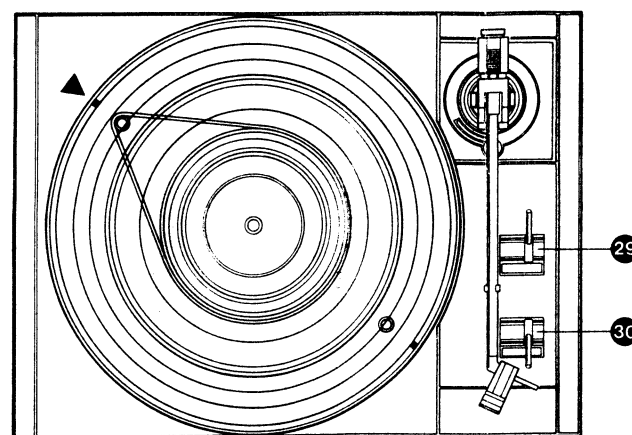
# Service Manual

(GB)	(NL)	(F)	(D)	(I)	
TECHNICAL DATA	SPECIFICATIES	SPECIFICATIONS	TECHNISCHE DATEN	DATI TECNICI	
Power supply voltages	Voedingsspanningen	Alimentation	Versorgungsspannungen	Tensioni d'alimentazione	: 110,127,220,240 V 50/60 Hz ~
Power consumption	Opgenomen vermogen	Puissance absorbée	Leistungsaufnahme	Potenza assorbita	: ≤ 110 W/max.
Dimensions	Afmetingen	Dimensions	Abmessungen	Dimensioni	: 450x880x360 mm approx.
Wave ranges:	Golfbereiken:	Gammes d'ondes:	Wellenbereiche:	Gamme d'onda:	
FM	FM	FM	UKW	FM	: 87.5-108 MHz
MW	MW	PO	MW	OM	: 520-1605 kHz ( 577- 187 m)
LW	LW	GO	LW	OL	: 150- 255 kHz (2000-1177 m)
Sensitivity:	Gevoeligheid:	Sensibilité:	Empfindlichkeit:	Sensibilità:	
Δf 75 kHz FM	Δf 75 kHz FM	Δf 75 kHz FM	Δf 75 kHz FM	Δf 75 kHz FM	: ( 1.6 μV mono, 26 dB S/N) ( 50 μV stereo, 46 dB S/N)
600 kHz AM	600 kHz AM	600 kHz AM	600 kHz AM	600 kHz AM	: (100 μV for 26 dB S/N)
Aerial input	Antenne ingang	Impédance d'antenne	Antennen-Impedanz	Ingresso antenna	: 75 Ω and 300 Ω
Output power (at 4 Ω load)	Uitgangsvermogen (4 Ω)	Puissance de sortie (4 Ω)	Ausgangsleistung (4 Ω)	Potenza d'uscita (con carico 4 Ω)	: 2x 13 W (1 kHz) D≤10%
Output impedance	Uitgangsimpedantie	Impédance de sortie	Ausgangsimpedanz	Impedenza d'uscita	: 4 Ω
Output impedance of headphones	Uitgangsimpedantie hoofdtelefoon	Impédance de sortie écouteurs	Kopfhörer-Ausgangs-impedanz	Impedenza d'uscita per cuffia	: 4-1000 Ω
<b>Cassette deck</b>	<b>Recorder</b>	<b>Magnétophone</b>	<b>Recorder</b>	<b>Piastra registratore</b>	
Speed	Snelheid	Vitesse	Geschwindigkeit	Velocità	: 4.76 cm/sec ± 2%
Wow and flutter	Wow en flutter	Pleurage et scintillement	Gleichlaufschwankungen	Wow e flutter	: ≤ 0.2%
<b>Record player</b>	<b>Platenspeler</b>	<b>Tourne-disque</b>	<b>Plattenspieler</b>	<b>Giradischi</b>	
Speed	Snelheid	Vitesse	Geschwindigkeit	Velocità	: 33 <sup>1</sup> /3-45 r.p.m
Wow and flutter	Wow en flutter	Pleurage et scintillement	Gleichlaufschwankungen	Wow e flutter	: ≤ 0.25%
Pick up cartridge	Element	Cartouche pick-up	Tonabnehmersystem	Testina	: GP215



(GB)

1	On/off switch	SK1
2	FM stereo indicator	6111
3	Equalizer controls	63 Hz 3315 250 Hz 3325 1 kHz 3335 4 kHz 3345 16 kHz 3355
4	Balance control	3370
5	MW/LW selection button	SK79
6	AM/FM selection button	SK78
7	Tuning knob	
8	Mode indicators	Phono 6333 Tuner 6334 CD/TV 6331 Cass. 6332
9	Volume control	3369
10	Mono/Rif selection button	SK76
11	CD/TV function button	SK77
12	Terminal socket stereo headphone 4-1000 Ω	BU2
13	Terminal socket mono microphone	BU1
14	Play button	
15	Stop/Eject button	
16	Wind/Cue button	
17	Rewind/Review button	
18	Dubbing B → A button	SK74
19	Noise reduction button	SK73
20	Tape type button	SK72
21	Pause button	
22	Play button	
23	Stop/Eject button	
24	Wind/Cue button	
25	Rewind/Review button	
26	Recording button	
27	Zero reset button	
28	Counter	
29	Cue lever	
30	Speed selector switch	SK-H
A	Terminals for loudspeakers 4 Ω	BU5-6
B	Terminal sockets for AM aerial and earth	BU4
C	Terminal sockets for FM aerial, 75 Ω	BU4
D	Terminal sockets for FM aerial, 300 Ω	BU4
E	Mains lead	
F	Terminal sockets for CD/TV	BU3



37 283 B12

(NL)

1	Aan/Uit schakelaar	SK1
2	FM stereo indicator	6111
3	Klankkleurregelaars	63 Hz 3315 250 Hz 3325 1 kHz 3335 4 kHz 3345 16 kHz 3355
4	Balanceregelaar	3370
5	Keuzetoets MW/LW	SK79
6	Keuzetoets AM/FM	SK78
7	Afstemknop	
8	Mode indicators	Phono 6333 Tuner 6334 CD/TV 6331 Cass. 6332
9	Geluidssterkteregelaar	3369
10	Mono/Rif keuzetoets	SK76
11	CD/TV functietoets	SK77
12	Aansluitbus stereo hoofdtelefoon 4-1000 Ω	BU2
13	Aansluitbus mono microfoon	BU1
14	Weergeeftoets	
15	Stop/Uitwerptoets	
16	Snelspoeltoets Wind/Cue	
17	Snelspoeltoets Rewind/Review	
18	Toets Dubbing B → A	SK74
19	Ruisonderdrukkingstoets	SK73
20	Keuzetoets voor bandsoort	SK72
21	Pauzetoets	
22	Weergeefknop	
23	Stop/Uitwerptoets	
24	Snelspoeltoets Wind/Cue	
25	Snelspoeltoets Rewind/Review	
26	Opneemtoets	
27	Nulstelloets	
28	Bandteller	
29	Hefboom	
30	Toerentalkeuze	SK-H
A	Luidsprekeraansluitklemmen 4 Ω	BU5-6
B	Aansluitbussen voor AM-antenne en aarde	BU4
C	Aansluitbus voor FM-antenne, 75 Ω	BU4
D	Aansluitbus voor FM-antenne, 300 Ω	BU4
E	Netsnoer	
F	Aansluitbussen CD/TV	BU3

(F)

1	Commutateur Marche/Arrêt	SK1
2	Indicateur lumineux FM stéréo	6111
3	Egaliseur graphique 5 bandes	63 Hz 3315 250 Hz 3325 1 kHz 3335 4 kHz 3345 16 kHz 3355
4	Balans stéréo	3370
5	Sélecteur de gamme d'ondes PO/GO	SK79
6	Sélecteur de modulation AM/FM	SK78
7	Bouton d'accord	
8	Voyants lumineux par Signalisation des saurces	Phono 6333 Tuner 6334 CD/TV 6331 Cass. 6332
9	Volume sonore	3369
10	Interrupteur Mono/Rif	SK76
11	Sélecteur CD/TV	SK77
12	Prise pour casque stéréo 4-1000 Ω	BU2
13	Prise pour microphone mono	BU1
14	Touche démarrage	
15	Touche d'arrêt/éjection	
16	Touche bobinage rapide avant	
17	Touche bobinage rapide arrière	
18	Bouton de duplication Dubbing B → A	SK74
19	Commutateur de réducteur du bruit	SK73
20	Commande sélection type de bande	SK72
21	Touche pause	
22	Touche démarrage	
23	Touche d'arrêt/éjection	
24	Touche bobinage rapide avant	
25	Touche bobinage rapide arrière	
26	Touche d'enregistrement	
27	Bouton de remise à zéro du compteur	
28	Compteur	
29	Lève bras	
30	Sélecteur de vitesse	SK-H
A	Prises pour haut-parleurs 4 Ω	BU5-6
B	Prise pour antenne extérieur AM et terre	BU4
C	Prise pour antenne extérieur FM, 75 Ω	BU4
D	Prise pour antenne FM, 300 Ω	BU4
E	Cordon secteur	
F	Prises d'entrées auxiliaires CD/TV	BU3

(I)

1	Interruttore acceso/spento	SK1
2	Indicatore FM stereo	6111
3	Controlli della tonalità	63 Hz 3315 250 Hz 3325 1 kHz 3335 4 kHz 3345 16 kHz 3355
4	Controllo del bilanciamento	3370
5	Selettore MW/LW	SK79
6	Selettore AM/FM	SK78
7	Manopola di sintonia	
8	Indicatori del modo	Phono 6333 Tuner 6334 CD/TV 6331 Cass. 6332
9	Controllo del volume	3369
10	Selettore Mono/Rif	SK76
11	Selettore CD/TV	SK77
12	Presa per cuffia stereo phones 4-1000 Ω	BU2
13	Presa per microfono mono	BU1
14	Tasto di riproduzione	
15	Tasto di arresto/espulsione	

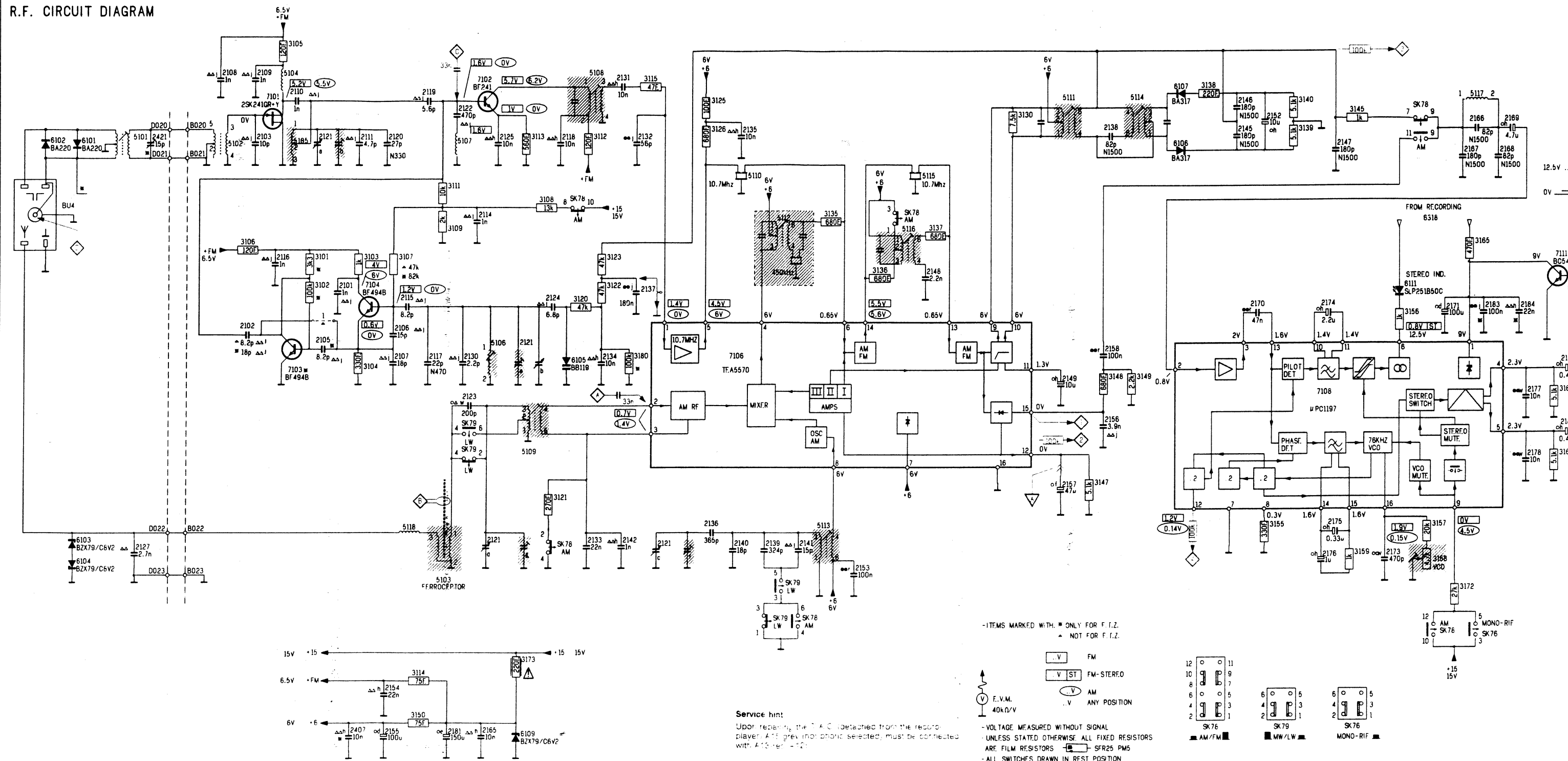
(D)

1	Netz-Ein/Aus-Schalter	SK1
2	FM stereo-Anzeige	6111
3	Klangfilter	63 Hz 3315 250 Hz 3325 1 kHz 3335 4 kHz 3345 16 kHz 3355
4	Balance	3370
5	MW/LW Wellenbereichsschalter	SK79
6	AM/FM Wählschalter	SK78
7	Tuning-Knopf	
8	Programmquellen-Anzeiger	Phono 6333 Tuner 6334 CD/TV 6331 Cass. 6332
9	Lautstärke-Einsteller	3369
10	Mono/Rif Schalter	SK76
11	CD/TV Wiedergabe-Schalter	SK77
12	Anschluss für Stereokopfhörer 4-1000 Ω	BU2
13	Anschluss für ein Mono-Mikrofon	BU1
14	Wiedergabe-Schalter	
15	Stop/Eject Taste	
16	Wind/Cue schneller Bandvorlauf	
17	Rewind/Review schneller Bandrücklauf	
18	Dubbing B → A-Schalter	SK74
19	Noise Red-Schalter	SK73
20	Bandsorten-Einstellung	SK72
21	Pause-Schalter	
22	Wiedergabe/Start-Schalter	
23	Stop/Eject-Schalter	
24	Schneller Bandvorlauf	
25	Schneller Bandrücklauf	
26	Record-Schalter	
27	Rückstelltaste	
28	Zählwerk	
29	Tonarmlift	
30	U/min. Drehzahlwähler	SK-H
A	Lautsprecher-Ausgänge 4 Ω	BU5-6
B	Anschluss für eine AM-Antenne mit Erde	BU4
C	Anschluss für eine FM-Antenne, 75 Ω	BU4
D	Anschluss für eine FM-Antenne, 300 Ω	BU4
E	Netzanschlussleitung	
F	CD/TV-Anschlussbuchsen	BU3

16	Tasto di avvolgimento rapido	
17	Tasto di riavvolgimento rapido	
18	Tasto di capiaturo Dubbing B → A	SK74
19	Tasto di soppressione del fruscio	SK73
20	Selettore del tipo di nastro	SK72
21	Tasto di pausa	
22	Tasto di riproduzione/avvolgimento	
23	Tasto di arresto/espulsione	
24	Tasto di avvolgimento rapido	
25	Tasto di avvolgimento rapido	
26	Tasto di registrazione	
27	Tasto di azzeramento	
28	Contanastro	
29	Leva	
30	Selettore dei giri	SK-H
A	Morsetti per casse acustiche 4 Ω	BU5-6
B	Prese per antenne AM e terro	BU4
C	Prese per antenna FM, 75 Ω	BU4
D	Prese per antenna FM, 300 Ω	BU4
E	Cordone di rete	
F	Prese CD/TV	BU3

2101 L 5 2107 F 6 2114 D 7 2119 B 6 2121 H10 2127 H 2 2134 F 9 2139 H11 2146 B18 2153 H13 2158 L16 2169 B22 2174 L19 2179 F23 2387 G25 3103 D 6 3108 C 8 3114 J 6 3123 D 9 3136 D13 3145 B20 3155 H18 3162 G23 3169 F23 3397 G25 5103 I 7 5108 B 9 5113 H12 5118 H 6 6105 F 9 7101 B 4 7111 731  
 2102 L 4 2108 B 4 2115 L 6 2120 C 6 2122 B 7 2130 F 7 2135 B11 2140 H11 2147 C19 2154 J 6 2165 K 7 2170 L18 2175 H19 2180 G23 2407 K 5 3104 F 6 3109 D 7 3115 B10 3125 B11 3137 D14 3147 G16 3156 L20 3163 F23 3172 I21 3398 G25 5104 B 4 5109 G 8 5114 B16 5118 C 2 6106 C17 7102 B 7 731  
 2103 C 4 2109 B 4 2116 D 4 2121 C 5 2123 F 7 2131 B 9 2136 H10 2141 H12 2148 D14 2155 K 6 2166 B21 2171 L21 2176 H19 2181 K 7 2421 C 3 3105 A 5 3111 C 7 3120 L 9 3126 B11 3138 B17 3148 F16 3157 H21 3165 D21 3173 J 8 3399 F23 5105 C 5 5110 C11 5115 C14 6102 C 1 6107 B17 7103 F 5 731  
 2105 L 5 2110 B 5 2117 F 7 2121 L 8 2124 E 8 2132 C10 2137 L10 2142 H 9 2149 F16 2156 F16 2167 C21 2172 L23 2177 F22 2183 L21 3101 E 5 3106 D 4 3112 C 9 3121 H 8 3130 B15 3139 B19 3149 F17 3158 H21 3167 D23 3180 F 9 5101 C 2 5106 E 7 5111 B16 5116 D13 6103 H 2 6109 K 8 7104 E 6 731  
 2106 L 6 2111 C 6 2118 C 8 2121 H 7 2125 C 8 2133 H 9 2138 B16 2145 B18 2152 B18 2157 G16 2168 C22 2173 H20 2178 G22 2184 L22 3102 E 5 3107 D 6 3113 C 8 3122 L 9 3135 D12 3140 B19 3150 K 6 3159 H20 3168 G23 3356 E24 5102 C 4 5107 C 7 5112 D11 5117 B21 6104 H 2 6111 L20 7106 F11 804

# R.F. CIRCUIT DIAGRAM



## RF part

+15 = 15 V  
 +FM = 6.5 V  
 +6 = 6 V

## 7101

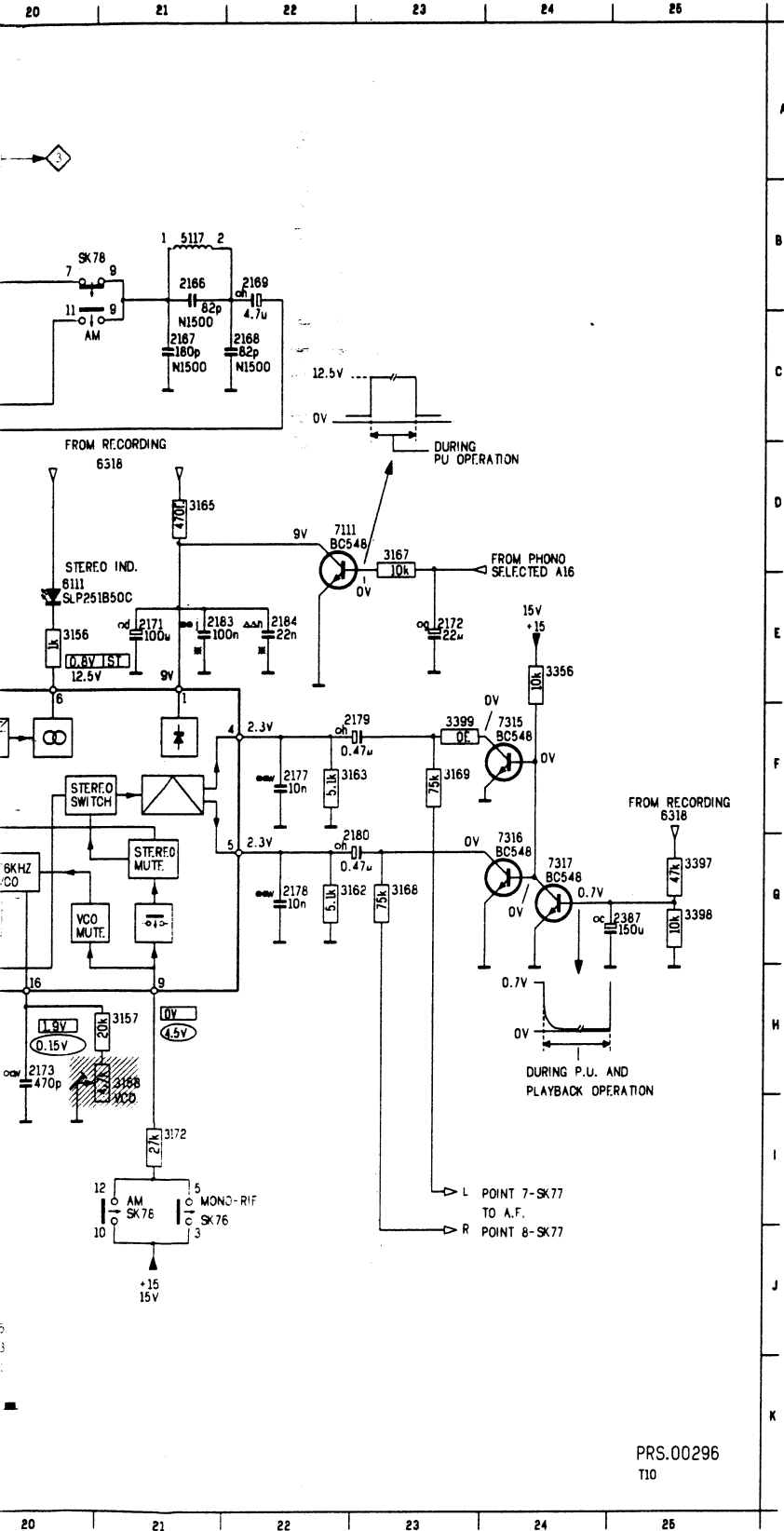
9 0 V  
 D 5.2 V 5.5 V  
 S 1

## 7102

e 1 V  
 b 1.6 V  
 c 5.7 V 6



3 H12 5118 H 6 6105 F 9 7101 B 4 7111 D22 5K76 121 5K78 112  
4 B16 6101 C 2 6106 C17 7102 B 7 7315 F24 5K78 H 8 5K79 F 7  
5 C14 6102 C 1 6107 B17 7103 F 5 7316 G24 5K78 121 5K79 G 7  
6 D13 6103 H 2 6109 K 8 7104 E 6 7317 G24 5K78 C 9 5K79 112  
7 B21 6104 H 2 6111 E20 7106 F11 BU4 C 1 5K78 D13 5K79 111



7102

e	1 V	0 V
b	1.6 V	0 V
c	5.7 V	6.2 V

7104

e	0.6 V	0 V
b	1.2 V	0 V
c	4 V	6 V

7106

1	1.4 V	0 V
2	0.7 V	1.4 V
3	0.7 V	1.4 V
4	6 V	
5	4.5 V	6 V
6	0.65 V	
7	6 V	
8	6 V	
9	6 V	
10	6 V	
11	1.3 V	
12	0 V	
13	0.65 V	
14	5.5 V	5.6 V
15	0 V	
16	⊥	

7108

1	9 V	
2	0.8 V	
3	2 V	
4	2.3 V	
5	2.3 V	
6	12.5 V	0.8 V ST
7	⊥	
8	0.3 V	
9	0 V	4.5 V
10	1.4 V	
11	1.4 V	
12	1.2 V	0.14 V
13	1.6 V	
14	1.6 V	
15	1.6 V	
16	1.9 V	0.15 V

7111

e	⊥
b	0 V
c	9 V

7315

e	⊥
b	0 V
c	0 V

7316

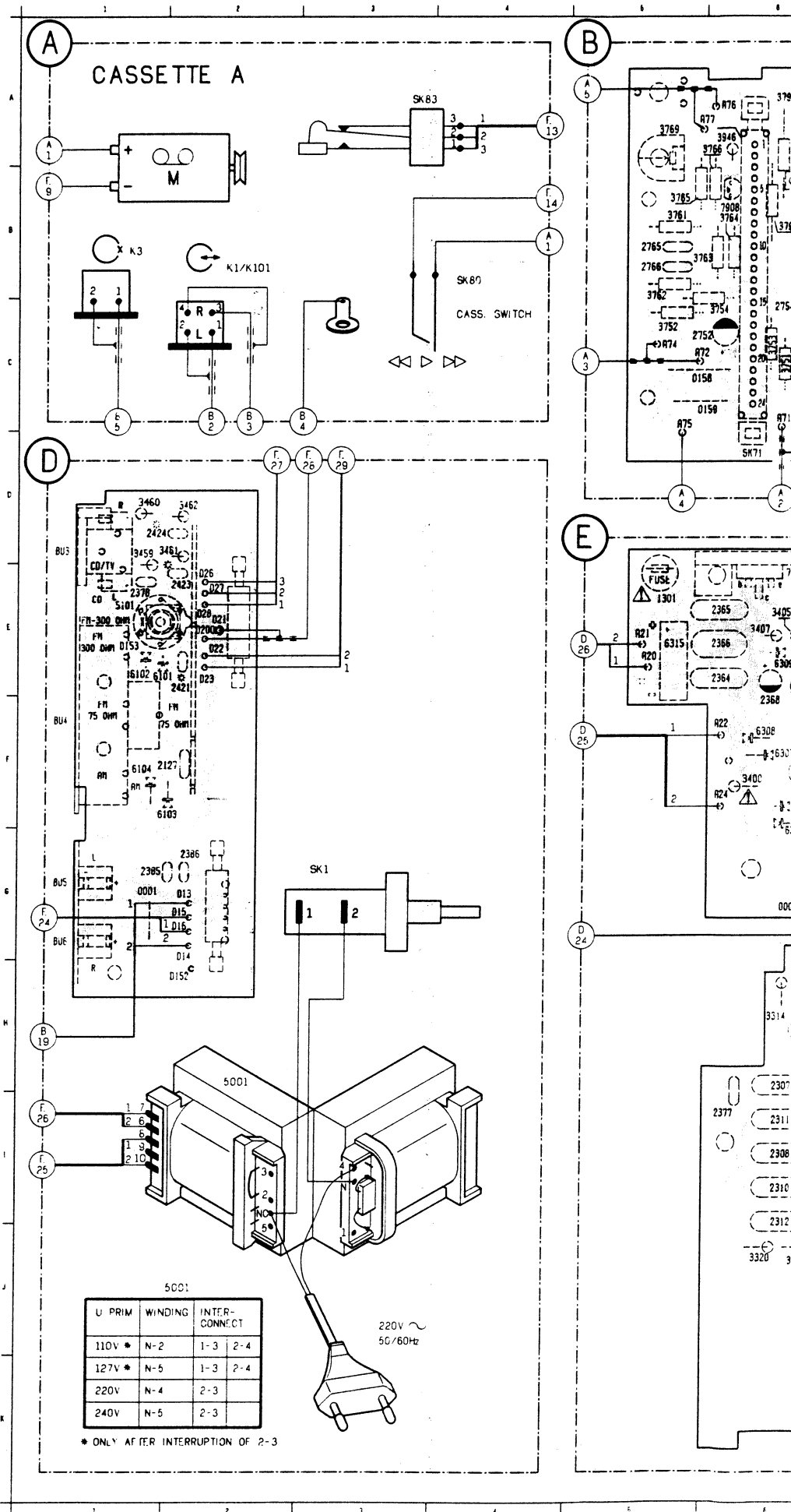
e	⊥
b	0 V
c	0 V

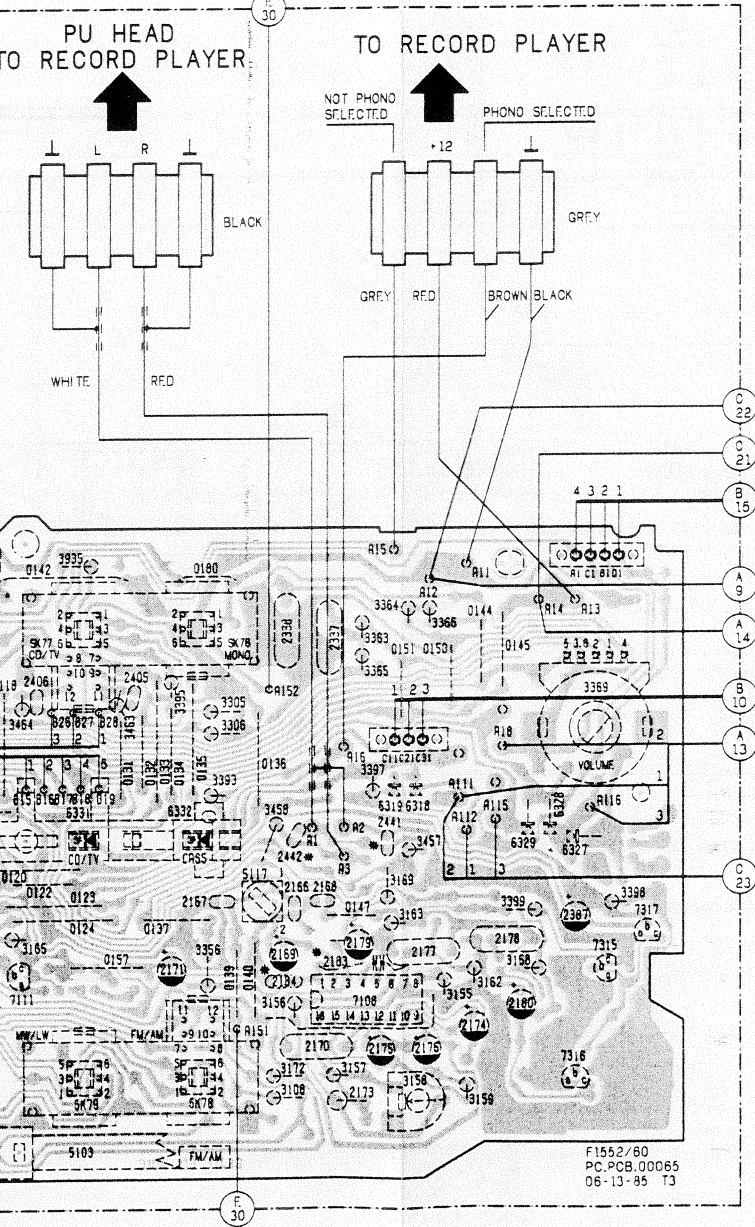
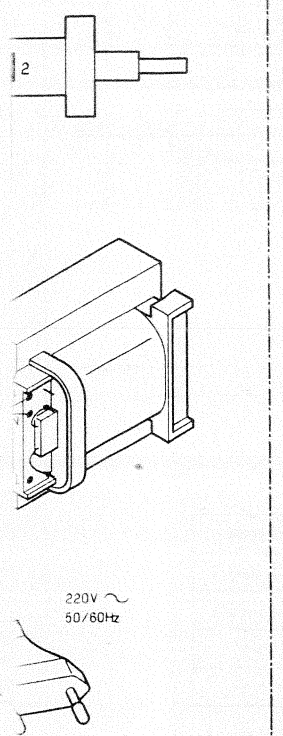
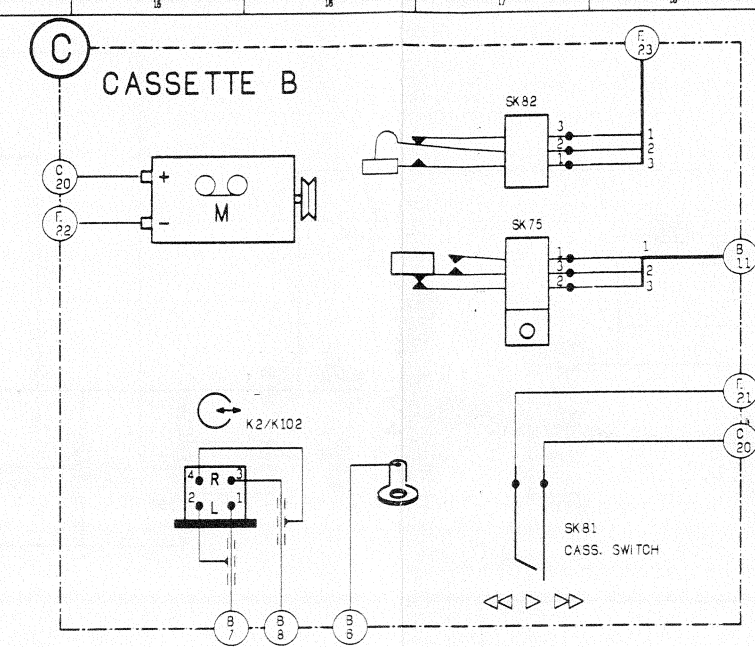
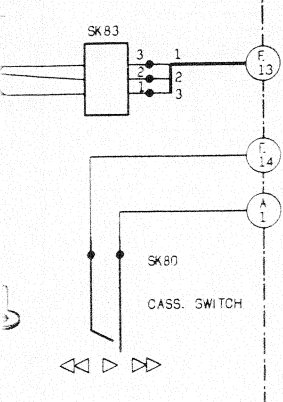
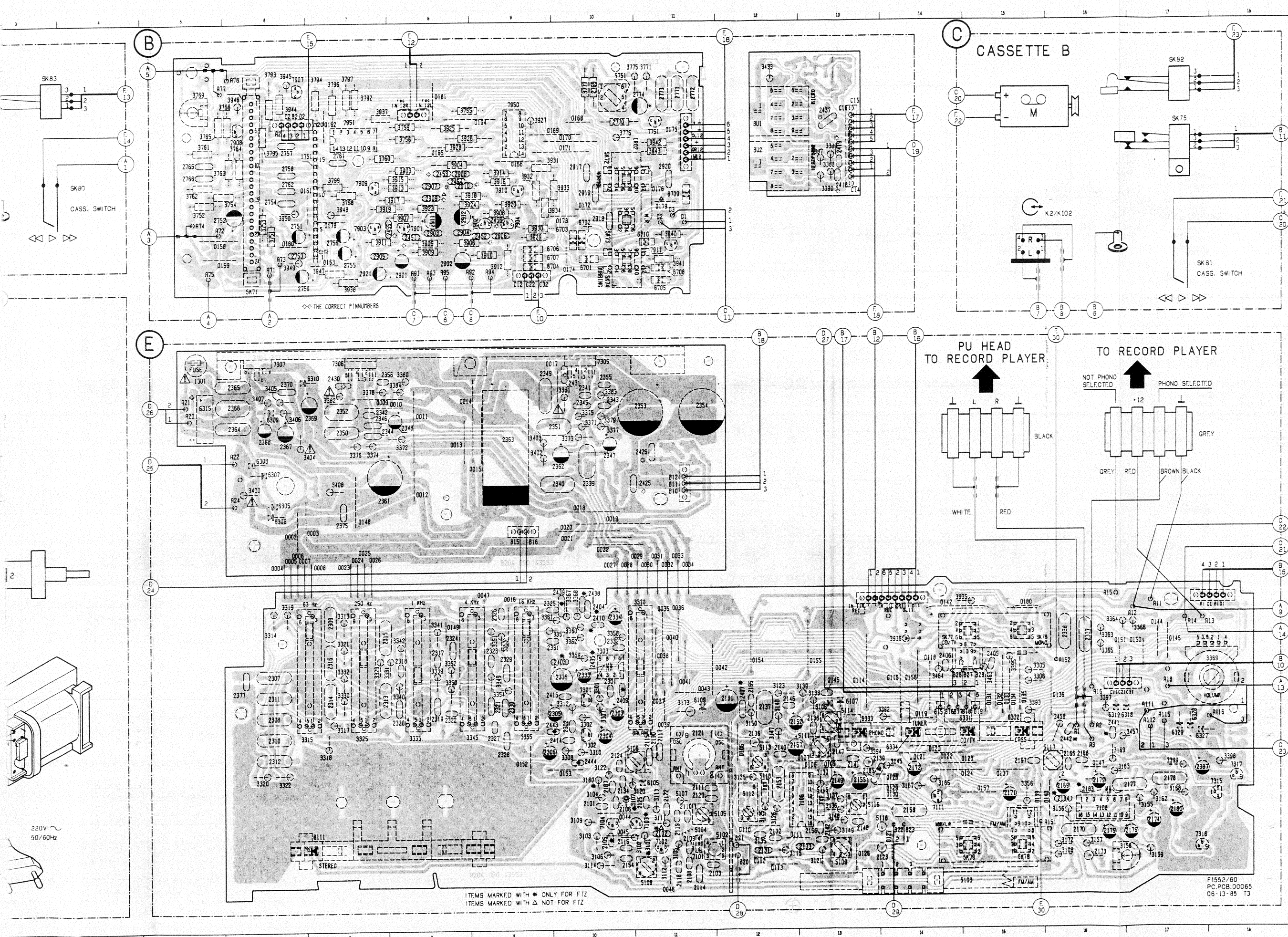
7317

e	⊥
b	0.7 V
c	0 V



**Service hint:**  
Upon repairing the T.A.C. (detached from the record player) A15-grey (not phono selected) must be connected with A13-red (+12).





ITEMS MARKED WITH \* ONLY FOR FTZ  
ITEMS MARKED WITH Δ NOT FOR FTZ

CS 101 854



**A.F. CIRCUIT DIAGRAM**

TO RECORDING POINT 3-7951

FROM PU HEAD

FROM R.F. 3169

FROM RECORDING 3935

CD/TV

BU3

3459

3461

D026

2423

220p

D027

2405

150p

N470

3463

62k

3457

470k

2441

100p

7 SK77 9

CD/TV

2303

0.47u

3301

4.7k

2301

180p

2443

1n

7301

BC549B

0.65V

7V

2305

47u

3317

1

3325a

250Hz

3335a

1kHz

3345a

4kHz

3355a

16kHz

2327

680p

2329

1n

3353

62k

2325

680p

2312

47n

3320

33k

3322

47n

2314

22n

3330

33k

3332

47n

2316

22n

3336

33k

3338

47n

2320

4.7n

3342

33k

3344

4.7n

2322

1n

3350

33k

3352

33k

2324

1n

3354

62k

2326

680p

2330

1n

3356

16kHz

2332

1n

3358

560k

2334

1n

3360

560k

2336

560k

2338

560k

2340

560k

2342

560k

2344

560k

2346

560k

2348

560k

2350

560k

2352

560k

2354

560k

2356

560k

2358

560k

2360

560k

2362

560k

2364

560k

2366

560k

2368

560k

2370

560k

2372

560k

2374

560k

2376

560k

2378

560k

2380

560k

2382

560k

2384

560k

2386

560k

2388

560k

2390

560k

2392

560k

2394

560k

2396

560k

2398

560k

2400

560k

2402

560k

2404

560k

2406

560k

2408

560k

2410

560k

2412

560k

2414

560k

2416

560k

2418

560k

2420

560k

2422

560k

2424

560k

2426

560k

2428

560k

2430

560k

2432

560k

2434

560k

2436

560k

2438

560k

2440

560k

2442

560k

2444

560k

2446

560k

2448

560k

2450

560k

2452

560k

2454

560k

2456

560k

2458

560k

2460

560k

2462

560k

2464

560k

2466

560k

2468

560k

2470

560k

2472

560k

2474

560k

2476

560k

2478

560k

2480

560k

2482

560k

2484

560k

2486

560k

2488

560k

2490

560k

2492

560k

2494

560k

2496

560k

2498

560k

2500

560k

2502

560k

2504

560k

2506

560k

2508

560k

2510

560k

2512

560k

2514

560k

2516

560k

2518

560k

2520

560k

2522

560k

2524

560k

2526

560k

2528

560k

2530

560k

2532

560k

2534

560k

2536

560k

2538

560k

2540

560k

2542

560k

2544

560k

2546

560k

2548

560k

2550

560k

2552

560k

2554

560k

2556

560k

2558

560k

2560

560k

2562

560k

2564

560k

2566

560k

2568

560k

2570

560k

2572

560k

2574

560k

2576

560k

2578

560k

2580

560k

2582

560k

2584

560k

2586

560k

2588

560k

2590

560k

2592

560k

2594

560k

2596

560k

2598

560k

2600

560k

2602

560k

2604

560k

2606

560k

2608

560k

2610

560k

2612

560k

2614

560k

2616

560k

2618

560k

2620

560k

2622

560k

2624

560k

2626

560k

2628

560k

2630

560k

2632

560k

2634

560k

2636

560k

2638

560k

2640

560k

2642

560k

2644

560k

2646

560k

2648

560k

2650

560k

2652

560k

2654

560k

2656

560k

2658

560k

2660

560k

2662

560k

2664

560k

2666

560k

2668

560k

2670

560k

2672

560k

2674

560k

2676

560k

2678

560k

2680

560k

2682

560k

2684

560k

2686

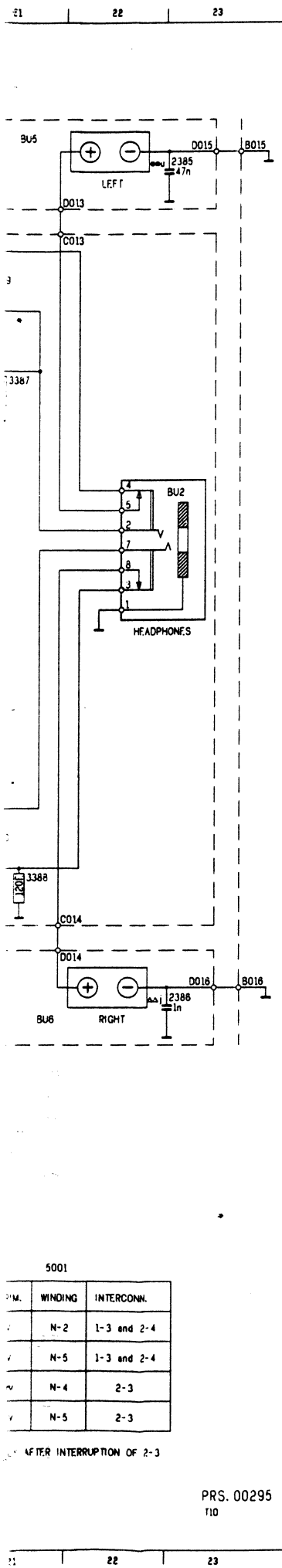
560k

2688

<

CS 101 855





1301	K17	3368	H15
2301	D 6	3369	H15
2302	I 6	3369	B15
2303	C 5	3370	I15
2304	I 5	3370	C15
2305	C 7	3371	B15
2306	I 7	3372	H15
2307	D 7	3373	B17
2308	I 7	3374	H17
2309	R12	3375	B17
2310	D12	3376	H17
2311	R11	3377	D17
2312	F11	3378	I17
2313	R11	3379	O19
2314	G11	3380	J19
2315	B12	3381	C19
2316	G12	3382	I20
2317	C12	3383	D19
2318	H12	3384	I19
2319	B11	3387	D21
2320	H11	3388	I21
2321	C11	3389	C21
2322	I11	3390	I21
2323	C12	3400	H17
2324	I12	3402	K14
2325	D11	3403	K14
2326	J11	3404	M14
2327	C11	3405	M14
2328	I11	3406	M13
2329	D11	3407	M13
2330	I11	3408	O13
2331	C13	3433	F 5
2332	I13	3457	B 4
2333	B14	3458	I 4
2334	G14	3459	D 1
2335	L11	3460	K 1
2337	C15	3461	D 2
2338	I15	3462	K 2
2339	B16	3463	D 3
2340	H16	3464	K 3
2341	C17	5001	K18
2342	H17	6305	N15
2343	C17	6306	N14
2344	H17	6307	C15
2345	C17	6308	C14
2346	I17	6309	N13
2347	D17	6310	N12
2348	J17	6315	K15
2349	R18	7301	C 6
2350	G18	7302	I 5
2351	C19	7307	M13
2352	I19	BU1	F 3
2353	B19	BU2	E23
2354	H19	BU3	K 1
2355	O18	BU3	D 1
2356	I18	BU5	R21
2361	O12	OU6	J21
2362	K13	SK-1	H19
2363	L14	SK77	J 5
2364	L15	SK77	J 5
2365	K14	SK77	K 5
2366	K16	SK77	D 5
2367	N14		
2368	N13		
2369	N11		
2370	M13		
2375	O12		
2377	O13		
2378	K 2		
2385	B23		
2386	J23		
2403	C14		
2404	I14		
2405	D 3		
2406	K 3		
2409	B13		
2410	H13		
2414	H 6		
2415	C 6		
2418	I21		
2419	C21		
2423	D 2		
2424	K 2		
2425	C20		
2426	I20		
2430	H19		
2431	B19		
2435	R14		
2437	F 5		
2438	J14		
2439	E14		
2441	B 4		
2442	I 4		
2443	D 6		
2444	I 6		
3301	C 6		
3302	I 6		
3305	D 5		
3306	H 5		
3307	B 6		
3308	H 6		
3310	H 6		
3312	B 6		
3313	D 8		
3314	J 8		
3315	J 7		
3315	D 7		
3317	C 8		
3318	I 8		
3319	R12		
3320	F12		
3321	R12		
3322	F12		
3325	J 8		
3325	D 8		
3329	R12		
3330	O12		
3331	R12		
3332	O12		
3335	J 9		
3335	O 9		
3339	B12		
3340	H12		
3341	B12		
3342	H12		
3345	O10		
3345	J10		
3349	C12		
3350	I12		
3351	C12		
3352	I12		
3353	O12		
3354	I12		
3355	J10		
3355	O10		
3357	C13		
3358	H13		
3359	R13		
3360	O13		
3361	L12		
3362	L12		
3363	B15		
3364	H15		
3365	C15		
3366	I15		
3367	B15		

# AF part

## 7301

e	
b	0.65 V
c	7 V

## 7302

e	
b	0.65 V
c	7 V

## 7303

1	7.5 V
2	6 V
3	7.3 V
4	
5	7.3 V
6	6 V
7	7.5 V
8	15 V

## 7305

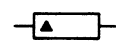
1	15 V
2	17 V
3	
4	17 V
5	35 V

## 7306

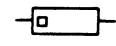
1	15 V
2	17 V
3	
4	17 V
5	35 V

## 7307

e	15 V
b	16.5 V
c	34 V



Carbon film  
0.2 W 70°C 5%



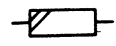
Carbon film  
0.33 W 70°C 5%



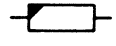
Metal film  
0.33 W 70°C 5%



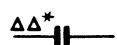
Carbon film  
0.5 W 70°C 5%



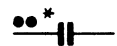
Carbon film  
0.67 W 70°C 5%



Carbon film  
1.15 W 70°C 5%



Ceramic plate  
Tuning ≤ 120 pF NP.0 2%  
Others -20/+80%



Polyester flat foil 10%



Metalized polyester flat film 10%



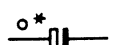
Polyester flat foil small size (Mylar) 10%



Polysterene film/foil 1%



Tubular ceramic



Miniature single



Subminiature tantalum ± 20%

- \*a = 2.5 V
- b = 4 V
- c = 6.3 V
- d = 10 V
- e = 16 V
- f = 25 V
- g = 40 V
- h = 63 V
- i = 100 V
- l = 125 V
- m = 150 V
- n = 160 V
- q = 200 V
- r = 250 V
- s = 300 V
- t = 350 V
- u = 400 V
- v = 500 V
- w = 630 V
- x = 1000 V
- A = 1.6 V
- B = 6 V
- C = 12 V
- D = 15 V
- E = 20 V
- F = 35 V
- G = 50 V
- H = 75 V
- I = 80 V

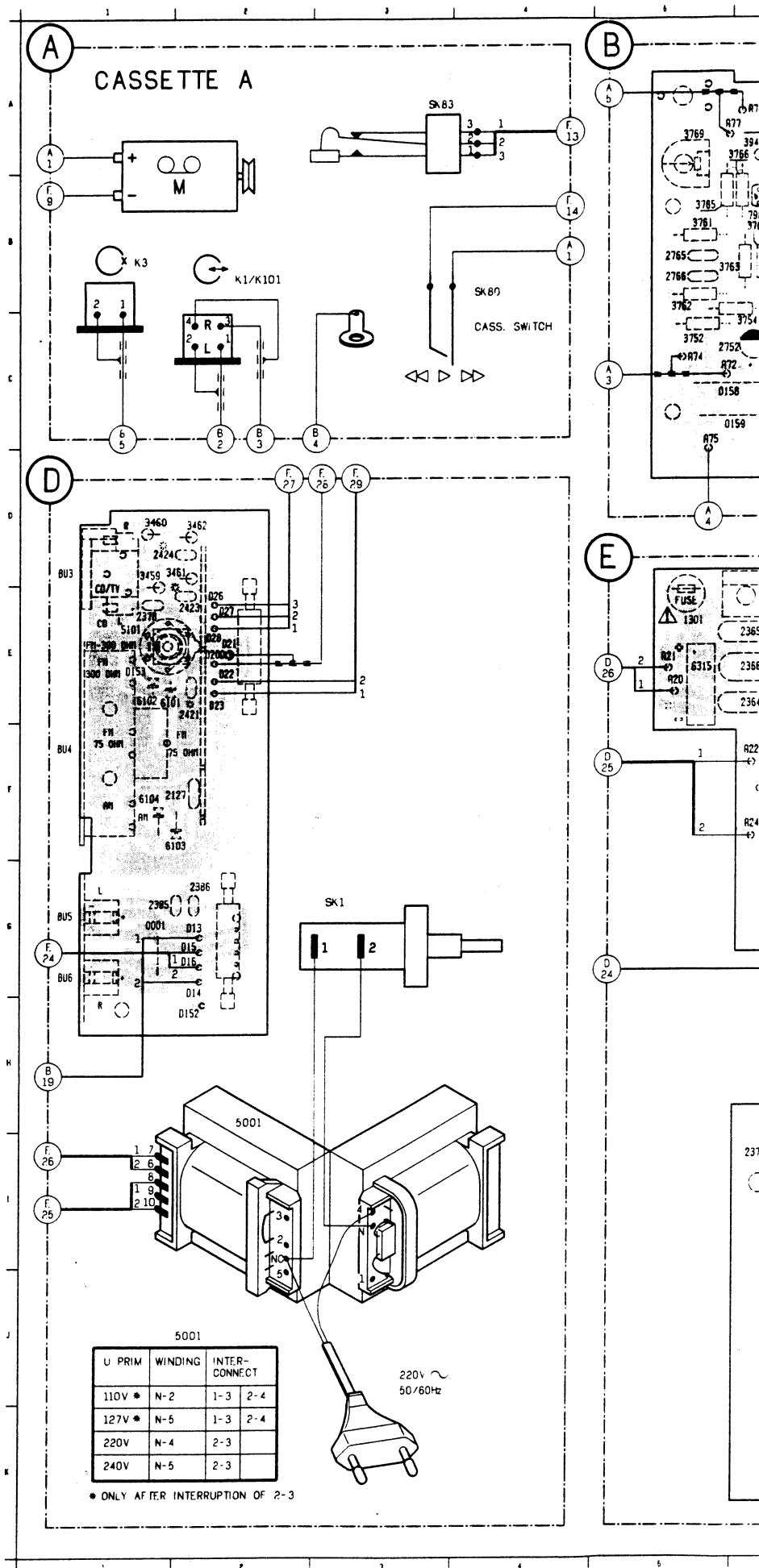
5001		
PM.	WINDING	INTERCONN.
✓	N-2	1-3 and 2-4
✓	N-5	1-3 and 2-4
✓	N-4	2-3
✓	N-5	2-3

AFTER INTERRUPTION OF 2-3

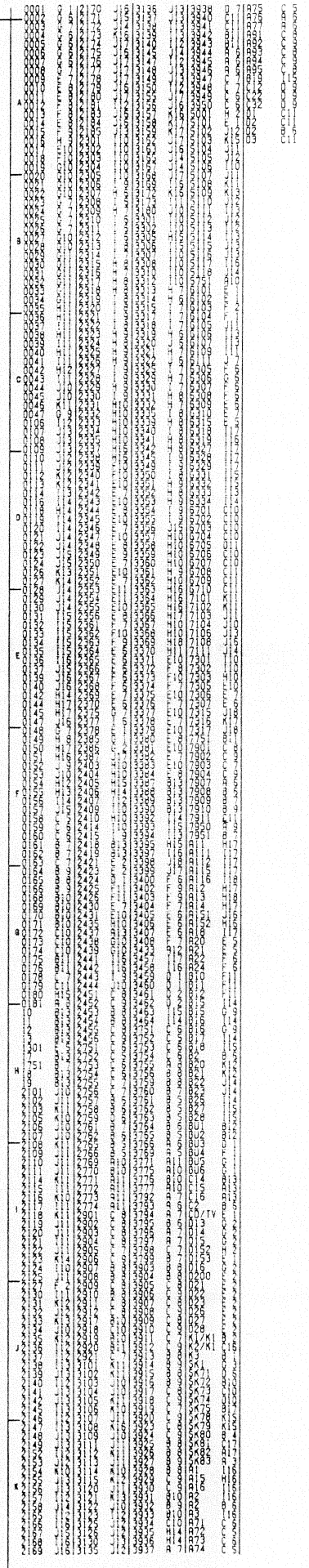
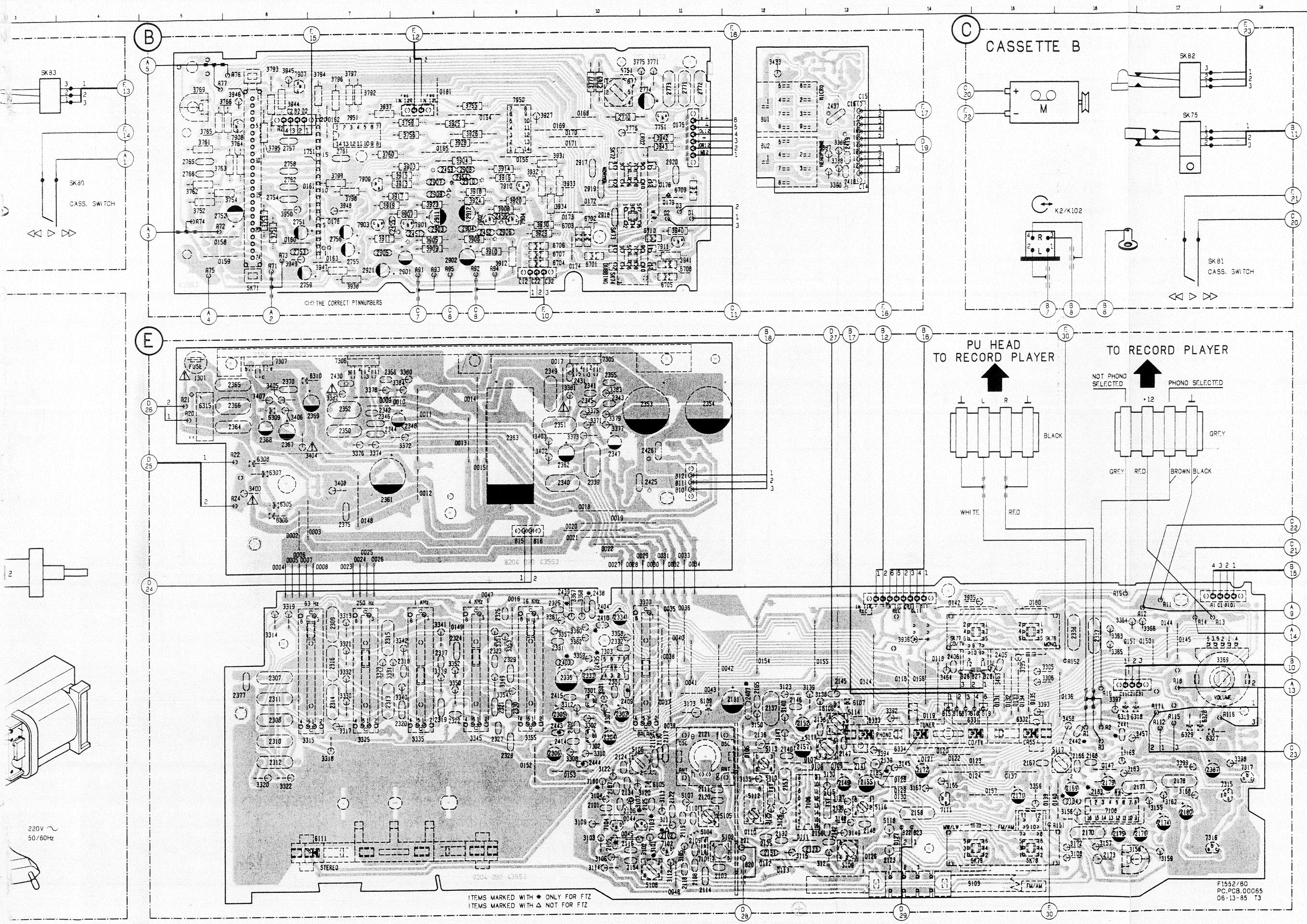
PRS. 00295  
110

# Service hint.

When repairing the T.A.C. (detached from the record-player) A15-grey (not phono selected) must be connected with A13-red (+12).

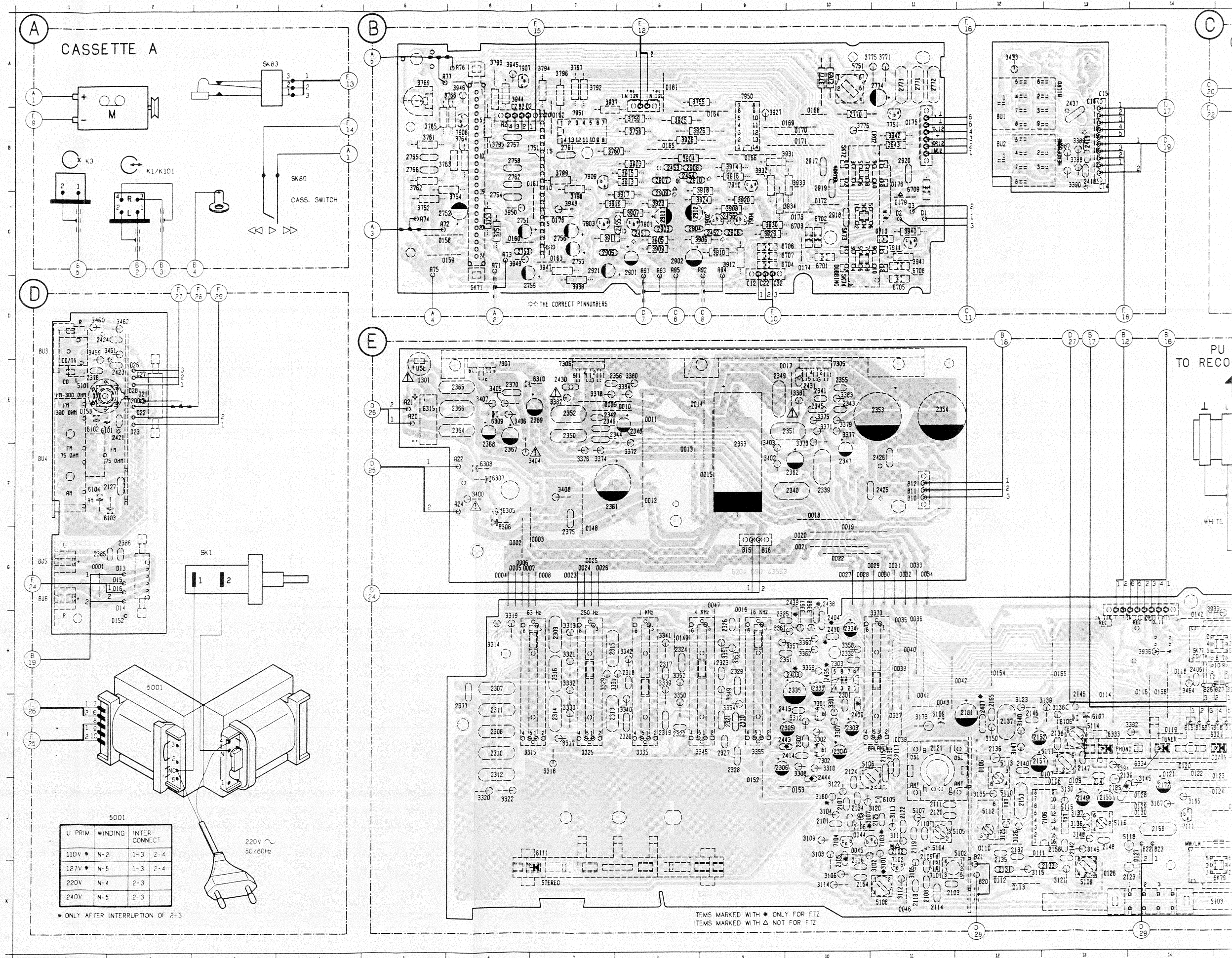








Service hint:  
Upon repairing the T.A.C. (detached from the record player) A15-grey (not phono selected) must be connected with A13-red (+12).







ALIGNMENT














General

- During the alignment, keep the levels of the injected signals as low as possible.
- Alignment of IF stages requires a sweep signal.  
For FM: Apply a 10.7 MHz signal with a sweep of 300 kHz at a frequency of 50 Hz.  
For AM: Apply a 450 kHz (468 kHz) signal with a sweep of 10 kHz at a frequency of 50 Hz.
- Switch SK76 position: stereo.


Equipment required

- RF generator
- Oscilloscope
- DC-millivoltmeter
- AC-millivoltmeter
- Frequency counter




FM-IF

SK switch	 signal	 to	 tune in	DETUNE	 adjust	 oscilloscope	 DC mV meter
FM SK-78	10.7 MHz $\Delta f$ 300 kHz (50 Hz)			<div><div>A</div><div>B</div></div>		<div><div>2</div><div>1</div></div> <div>center</div> 	
	fo=f generator $\Delta f$ = 10 kHz (50 Hz)				5108	<div><div>2</div><div>2</div></div> <div>symmetrical</div> <div>MAX.</div> 	
	10.7 MHz $\Delta f$ 300 kHz (50 Hz) 1 mV				5114 5111	<div><div>3</div><div>3</div></div> <div>symmetrical</div> 	
	10.7 MHz No sweep				5114		DC  0 V $\pm$ 30 mV
							


FM-oscillator

FM SK-78	87.63 MHz mod. 1 kHz $\Delta f$ 22.5 kHz		max. cap. 2121		5106	<div><div>3</div></div> <div>max. ~</div>	
	108.0 MHz mod. 1 kHz $\Delta f$ 22.5 kHz		min. cap. 2121		2121e		

FM-RF antenna section

FM SK-78	87.63 MHz mod. 1 kHz $\Delta f$ 22.5 kHz				5105	<div><div>3</div></div> <div>max. ~</div>	
	108.0 MHz mod. 1 kHz $\Delta f$ 22.5 kHz				2121h		
							

Stereo-decoder

FM SK-78	No signal				3158	Counter  19 kHz $\pm$ 100 Hz	
-------------	-----------	--	--	--	------	---	--

GB

1 Pla

of

2 Ad

3 Ad

A Sw

B Op

F

1 En

crè

2 Aju

et c

3 Aju

liné


A Me

cor


B Ou




GB

- 1 Place the peak of the band-pass curve in the middle of the picture by shifting the sweep frequency.
- 2 Adjust for maximum height and symmetry.
- 3 Adjust for linearity and symmetry of the S-curve.
- A Switch off A.F.C. by short-circuiting 2137.
- B Open solder bridge .


F

- 1 En décalant la fréquence de wobulation, placer la crête de la courbe de réponse au centre de l'écran.
- 2 Ajuster pour avoir une courbe d'amplitude maximale et de bonne symétrie.
- 3 Ajuster pour avoir une courbe en S de bonne linéarité et de bonne symétrie.
- A Mettre la C.A.F. hors service en court-circuitant, le condensateur 2137.
- B Ouvrir le pontet .

NL

- 1 De top van de doorlaat curve, door verschuiven van wobbelfrequentie, in het midden van het scherm plaatsen.
- 2 Afregelen op maximum hoogte en symmetrie.
- 3 Afregelen op lineariteit en symmetrie van de S-kurve.
- A A.F.C. uitschakelen door 2137 kort te sluiten.
- B Open soldeerbrug .

I

- 1 Portare la cresta della curva di risposta al centro dello schermo per mezzo di scivolamento della frequenza di modulazione.
- 2 Regolare per altezza e simmetria massima.
- 3 Regolare per linearità e simmetria della curva ad S.
- A Mettere il C.A.F. fuori funzionamento cortocircuitando il condensatore 2137.
- B Aprire il ponticello .

D

- 1 Die Spitze der Durchlasskurve in der Mitte des Bildes legen dadurch, dass man die Wobbelfrequenz verschiebt.
- 2 Abgleichen auf Maximalhöhe und Symmetrie.

Abgleichen auf Linearität und Symmetrie der S-Kurve.

GB Electrical measurements and adjustments "Recorder"

- A The maximum permissible speed deviation is  $\pm 2\%$ . Moreover, the wow and flutter value can be read. This value should not exceed 0.35%.
- B Connect the Service cassette set to the apparatus via one of the loudspeaker connectors.
  - Set the apparatus to the play back position with the 50 Hz cassette from the cassette service set.
  - With R at the back of the motor, adjust for minimum variation of the indicator reading.
- C If the accuracy requirements are less stringent a high quality ferro (normal) cassette may be used as an alternative.
- D If the adjustment is correct the frequency response curve will be similar to curve b in Fig. 2 (distortion  $\leq 5\%$ ).
- E Switch off A.L.C. by short-circuiting electrolytic capacitor 2759.
- F Mount a resistor of 20E between point 2(4) of K2 (K102) and A93 (A94).

F Mesurer électriques et réglages "Recorder"

- A L'écart de vitesse maximum admissible est de  $\pm 2\%$ . Le taux de pleurage pourra également être lu lors de cette mesure.
  - Cette valeur ne doit pas dépasser 0,35%.
- B Relier par l'intermédiaire d'un des connecteurs de haut-parleur la section cassette Service à l'appareil.
  - Positionner en reproduction et faire passer une cassette 50 Hz de la section cassette Service.
  - Régler grâce à R à l'arrière du moteur pour que la variation sur l'indicateur soit minimum.
- C Si les exigences du point de précision, ne sont pas tellement élevées, une cassette au ferro (normale) de bonne qualité, pourra également convenir.
- D Si le réglage est correctement effectué, la courbe de fréquence devra être égale à la courbe b de la Fig. 2 (distorsion  $\leq 5\%$ ).
- E Mettre la A.L.C. hors service en court-circuitant le condensateur chimique 2759.
- F Monter une résistance de 20E entre le point 2(4) de K2 (K102) et A93 (A94).

A

A.F.C.-Regelung ausschalten durch kurzschluss von 2137.

B

Lötbrücke  öffnen.

"Bei notwendigem Abgleich ist das Gerät auf die gesetzlich vorgeschriebenen Eckfrequenzen abzugleichen".  
>87.2 MHz <108.5 MHz.

NL

Elektrische metingen en instellingen "Recorder"









- A De hoogst toelaatbare snelheidsafwijking bedraagt  $\pm 2\%$ .
  - Tevens kan bij deze meting de jengelwaarde afgelezen worden.
  - Deze waarde mag niet hoger zijn dan 0.35%.
- B Via een van de luidsprekerconnectors het Service-cassettedeel met het apparaat verbinden.
  - Zet het apparaat in de weergeefstand met de 50 Hz cassette uit het Service-cassettedeel.
  - Met R aan de achterzijde van de motor op minimale variatie van de indicatoraflezing instellen.
- C Als de nauwkeurigheidseisen minder streng zijn, kan als alternatief een ferro-cassette (normal) van hoge kwaliteit gebruikt worden.
- D Als de instelling juist is, zal de frequentiekromme gelijk zijn aan kromme b in Fig. 2 (vervorming  $\leq 5\%$ ).
- E A.L.C. regeling uitschakelen door elco 2759 kort te sluiten.
- F Plaats een weerstand van 20E tussen punt 2(4) van K2 (K102) en A93 (A94).

D



Elektrische Messungen und einstellungen "Recorder"

- A Die höchstzulässige Geschwindigkeitsabweichung beträgt  $\pm 2\%$ .
  - Auch lässt sich bei dieser Messung der Jaulwert ablesen.
  - Dieser Wert darf 0,35% nicht überschreiten.
- B Über einen der Lautsprecherkonnektoren den Service-Cassetteneteil mit dem Gerät verbinden.
  - Mit dem 50-Hz-Cassette aus dem Service-Cassetteneteil das Gerät in die Wiedergabestellung bringen.
  - Mit R auf der Rückseite des Motors auf Mindest-Schwankung der Anzeigerablesung einstellen.
- C Wenn die Genauigkeitsanforderungen weniger streng sind, kann als Alternative eine Hochleistungs-Ferrocassette (Normal) benutzt werden.
- D Wenn die Einstellung richtig ist, wird der Frequenzgang gleich der kurve b in Bild 2 (Verzerrung  $\leq 5\%$ ) sein.
- E A.L.C. ausschalten durch Kurzschluss von Elko 2759.
- F Einer Widerstand von 20E zwischen Punkt 2(4) von K2 (K102) und A93 (A94) montieren.




AM-IF

SK	signal	to	tune in	adjust	oscilloscope	AC mV meter
AM SK-78 MW SK-79	450 kHz $\Delta f$ 10 kHz (50 Hz)				 center  fo	
	fo=f generator $\Delta f$ = 10 kHz (50 Hz)			 2121 max. cap.	 Symmetrical MAX. 1 2	

AM-RF-oscillator

AM SK-78 LW SK-79	147 kHz mod: 1 kHz 30%		2121 max. cap.	5113	 max. ~
AM SK-78 MW SK-79	1635 kHz mod: 1 kHz 30%		2121 min. cap.	2121f	

AM-RF-antenna section

AM SK-78 MW SK-79	560 kHz mod: 1 kHz 30%			5103	 max. ~
	1500 kHz mod: 1 kHz 30%			2121g	
AM SK-78 LW SK-79	155 kHz mod: 1 kHz 30%			5109	

Repeat - Herhalen - Répéter - Wiederholen - Ricominciare

C mV meter

DC 

V  $\pm$  30 mV







# **I Misure e regolazioni elettriche "Recorder"**

- A** – La deviazione massima di velocità è  $\pm 2\%$ . Inoltre, può essere rilevato il wow e flutter.

– Questo valore non deve eccedere dello 0,35%.

**B** – Collegare lo strumento di servizio al connettore di uscita di una cassa acustica dell'apparecchio.

– Posizionare l'apparecchio in riproduzione e usare la cassetta test a 50 Hz.

– Regolare la velocità del motore (R), per la minima deviazione dello strumento.

**C** – Per necessità può essere usata una cassetta di alta qualità al ferro (normale).
- D** – Se la regolazione è corretta la curva di risposta in frequenza sarà simile alla curva b in Fig. 2 (distorsione  $\leq 5\%$ ).

**E** – Mettere il C.A. fuori funzionamento cortocircuitando il condensatore 2759.

**F** – Montare una resistenza di 20E fra il punto 2(4) di K2 (K102) e A93 (A94).

## **Recorder A and B**

Adjustment	Cassette	Recorder in position SK..	Apply signal to	Measure on	Read on	Adjust with	Adjust to
Playback speed Method 1 or Method 2	3150 Hz part of SBC420Fe	PLAY	–	Loudspeaker output or 12 13	Wow and flutter meter	Trimpotmeter R at the back of the motor	A
	Test cassette set 801/CCS	PLAY	–	Loudspeaker output	indicator on test set	Trimpotmeter R at the back of the motor	B
Azimuth R/P head	8 kHz part of SBC420Fe	PLAY	–	12 13	AC mV meter or oscilloscope	Left screw on R/P head	Max. output
Static playback	–	PLAY F only rec B	K (L) A M (N) B 170 mV-315 Hz via 20 kΩ	12 13	AC mV meter > 100 mV	–	
Playback sensitivity	315 Hz-0 dB part of SBC420Fe	PLAY	–	12 13	AC mV meter > 300 mV	–	
BIAS oscillator frequency only rec. A	Any cassette	RIF SK-76 OFF REC+PLAY	–	11	Frequency counter	5751	55 kHz
Target value BIAS only rec. A	SBC420Fe side-2 C	PLAY	–	9 10	AC mV meter	3769	9 mV
BIAS only rec. A	SBC420Fe side-2 C	REC+PLAY	1 kHz R (S) E		AC mV meter	LF generator	12 mV
			63 Hz 250 Hz 6.3 Hz 10 kHz	Record a number of frequencies (same input voltage)			
	Rewind recording made	PLAY		12 13	AC mV meter		See graph Fig. 1 if necessary repeat adjustment D

## **Record player**

Adjustment	Service Manual	Record player position SK		Read on	Adjust with	Adjust to
Speed	F7046	SK-H 33 1/3 rpm 45 rpm		Stroboscope	R3603 R3602	33 1/3 rpm 45 rpm

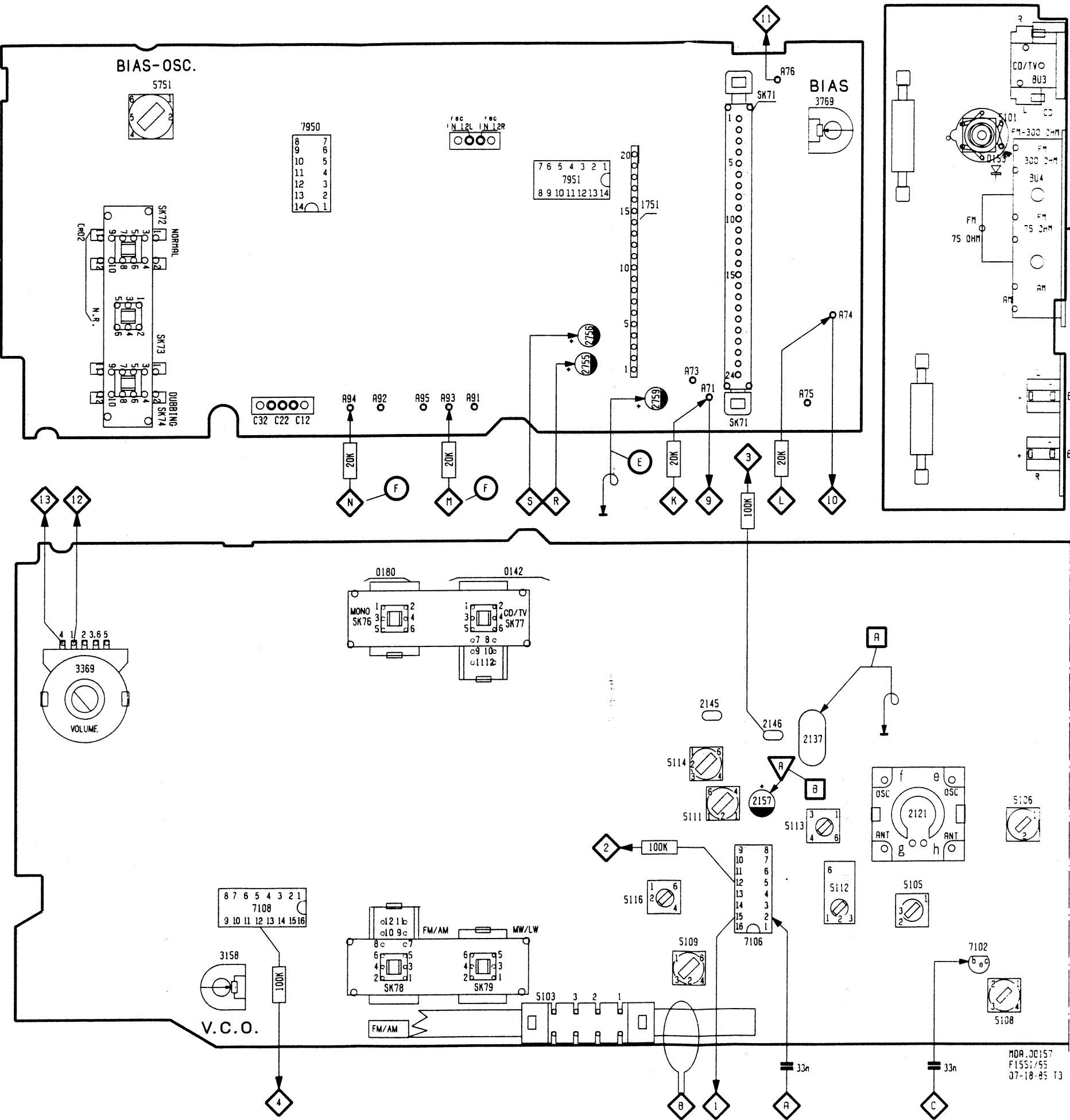
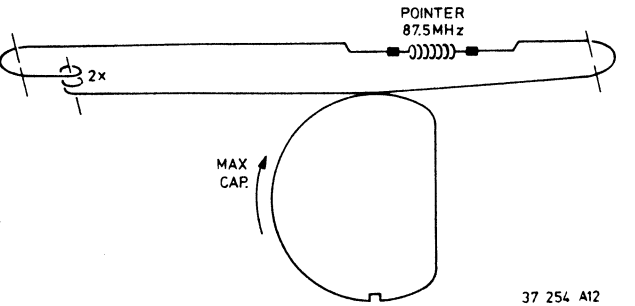
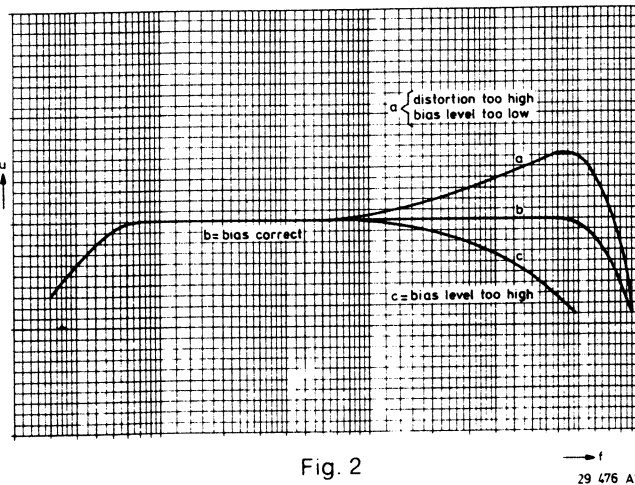
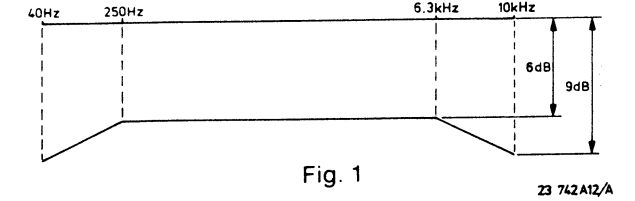
Electrical measurements and adjustments recorder and record player

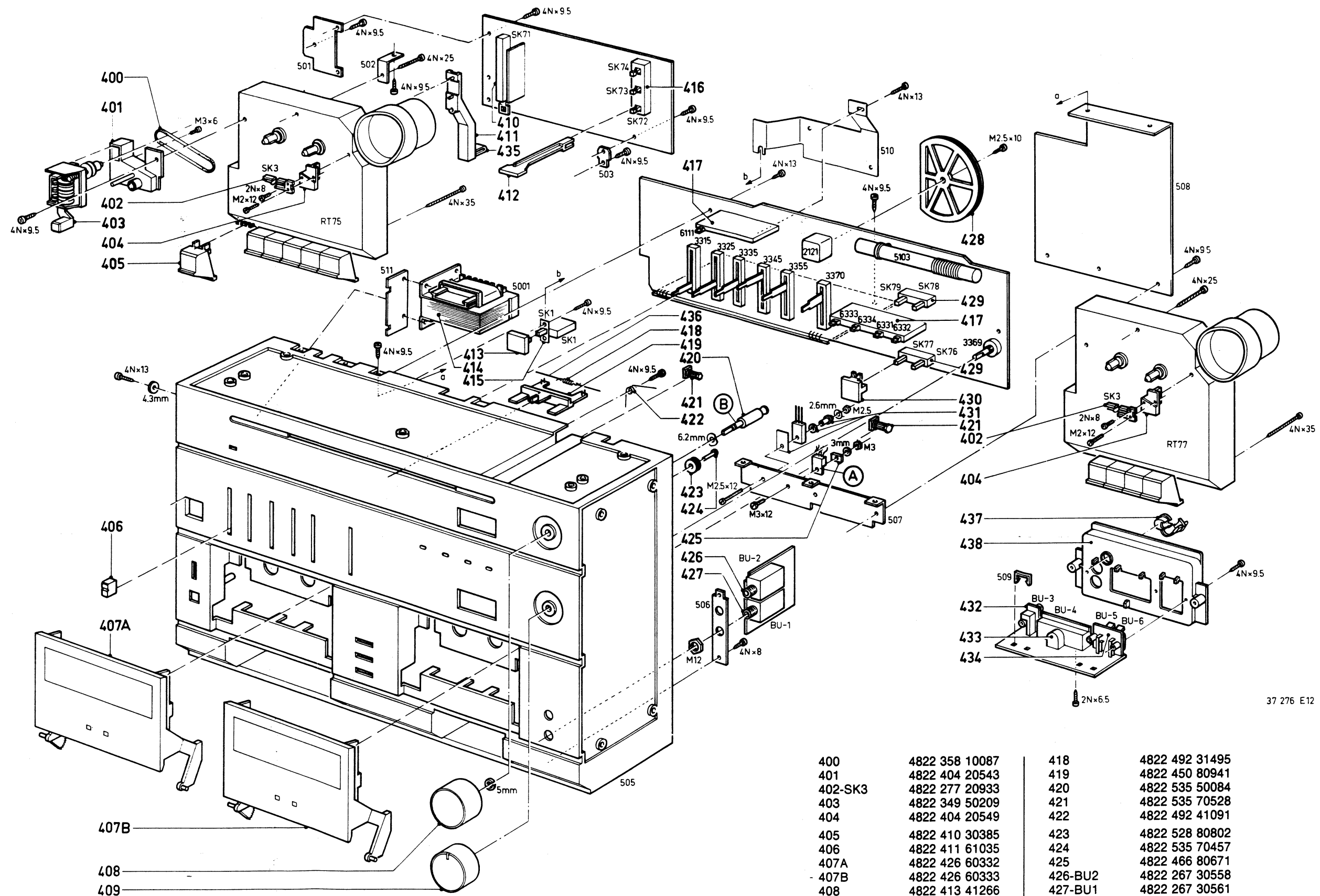
General conditions recorder

- Prior to any measurement or adjustment with the tape running, heads and tape guides should be degaussed and cleaned.
- The measurements and adjustments are related to the left-hand channel.
- The corresponding test points and adjusting elements for the right-hand channel are given in brackets.
- The voltages have been measured relative to earth.

Required test equipment and test cassettes

- AF generator
- AC mV meter
- Wow and flutter meter
- Multi meter
- Frequency counter
- Cassette service set 801CSS 4822 395 30078
- Universal test cassette SBC420Fe 4822 397 30071



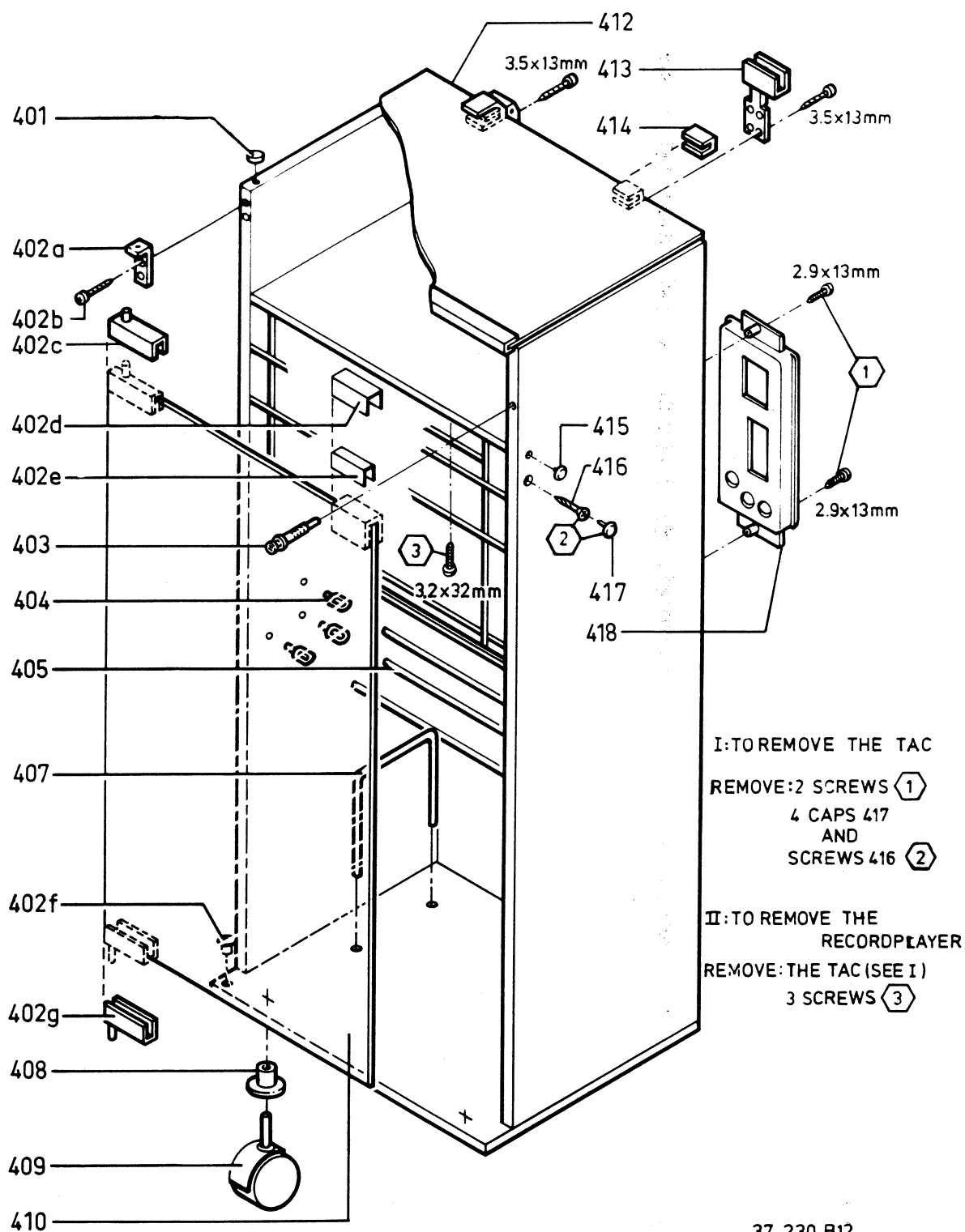


- (A) Silicone grease 5322 390 20019  
 (B) Shell Alvania 2 4822 389 10001

400	4822 358 10087	418	4822 492 31495
401	4822 404 20543	419	4822 450 80941
402-SK3	4822 277 20933	420	4822 535 50084
403	4822 349 50209	421	4822 535 70528
404	4822 404 20549	422	4822 492 41091
405	4822 410 30385	423	4822 528 80802
406	4822 411 61035	424	4822 535 70457
407A	4822 426 60332	425	4822 466 80671
407B	4822 426 60333	426-BU2	4822 267 30558
408	4822 413 41266	427-BU1	4822 267 30561
409	4822 413 41267	428	4822 528 80888
410-SK71	4822 277 30709	429-SK76 ÷ 79	4822 276 20325
411	4822 404 20576	430	4822 410 30386
412	4822 410 30426	431	4822 310 30559
413	4822 410 30387	432-BU3	4822 267 30552
413/94	4822 410 24285	433-BU4	4822 265 40145
414	4822 146 21028	434-BU5,6	4822 290 80609
415-SK1	4822 276 11263	435	4822 492 63178
416-SK72 ÷ 74	4822 276 30325	436	4822 321 30213
417	4822 255 40374	437	4822 325 50125
		438	4822 464 70341




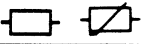




37 276 E12





37 230 B12

401	4822 462 71344	407	4822 404 20581	413	4822 417 10833
402	4822 310 20347	408	4822 462 71345	414	4822 466 61049
403	4822 417 41004	409	4822 528 70428	415	4822 462 71346
404	4822 462 71359	410	4822 450 60515	416	4822 502 30367
405	4822 535 91832	412	4822 450 60513	417	4822 462 71346

						
2117	Plate cap.	22 pF N470	4822 122 32076	BAX14	4822 130 34193	
2120	Plate cap.	27 pF N330	4822 122 31234	BA220	4822 130 34221	
2121	Varco		4822 125 50172	BA317	4822 130 30847	
2136	Miopoco	365 pF 630 V	4822 121 50803	BB119	4822 130 31273	
2138	Plate cap.	82 pF N1500	4822 122 31309	BZX79/C16	4822 130 34268	
2139	Miopoco	324 pF 630 V	4822 121 50542	BZX79/C20	4822 130 34499	
2140	Plate cap.	18 pF N1500	5322 122 34146	BZX79/C6V2	4822 130 34167	
2145	Plate cap.	180 pF N1500	4822 122 32106	BZX79/C8V2	4822 130 34382	
2146	Plate cap.	180 pF N1500	4822 122 32106	SLP151B50C red	4822 130 32323	
2147	Plate cap.	180 pF N1500	4822 122 32106	SLP251B50C green	4822 130 32057	
2166	Plate cap.	82 pF N1500	4822 122 31309	1N4148	4822 130 30621	
2167	Plate cap.	180 pF N1500	4822 122 32106	2KBP02-7001	4822 130 50363	
2168	Plate cap.	82 pF N1500	4822 122 31309			
2341	Plate cap.	100 pF N1500	4822 122 31081			
2342	Plate cap.	100 pF N1500	4822 122 31081	BC548	4822 130 40938	
2355	Plate cap.	100 pF N1500	4822 122 31081	BC548B	4822 130 40937	
2405	Plate cap.	150 pF N470	4822 122 32443	BC548C	4822 130 44196	
2406	Plate cap.	150 pF N470	4822 122 32443	BC549B	4822 130 40936	
2765	Plate cap.	180 pF N1500	5322 122 34232	BC549C	4822 130 44246	
2766	Plate cap.	180 pF N1500	5322 122 34232	BC558B	4822 130 44197	
						
3158	Potm. trimming	4k7 Lin	4822 100 10036	BD675	5322 130 44786	
3315	Potm. trimming	100k Lin	4822 105 10578	BF241	4822 130 40898	
3325	Potm. trimming	100k Lin	4822 105 10578	BF494	4822 130 44195	
3335	Potm. trimming	100k Lin	4822 105 10578	BF494B	4822 130 41376	
3345	Potm. trimming	100k Lin	4822 105 10578	2SK241GR+Y	4822 130 42217	
3355	Potm. slide	100k Lin	4822 105 10578			
3369	Potm.	100k volume	4822 101 20749			
3370	Balance		4822 105 10579	5001	Mains transformer	4822 146 21028
3381	Fuse res.	1E NFR25	4822 111 30483	5101	Aerial Trafo L-2M7-D	4822 148 80183
3382	Fuse res.	1E NFR25	4822 111 30483	5102	Aerial Trafo Sym.	4822 157 51233
3400	Fuse res.	1E NFR25	4822 111 30483	5103	Ferroceptor	4822 158 60515
3404	Fuse res.	4E7 NFR30	4822 116 52448	5104	Coil	4822 156 10641
3769	Potm. trimming	100k	4822 100 10052	5105	Coil RF	4822 157 51693
						
HEF4016B	5322 209 14119					
NJM4558CD	4822 209 81054					
TDA2030VH	4822 209 82972					
TEA5570	4822 209 81563					
UPC1197C	4822 209 81544					
						
Safety regulations require that the set be restored to its original condition and that parts which are identical with those specified be used.						
						
Veiligheidsbepalingen vereisen, dat het apparaat in zijn oorspronkelijke toestand wordt teruggebracht en dat onderdelen, identiek aan de gespecificeerde, worden toegepast.						